KUZ'MIN, A. D.; SALOMONOVICH, A. Ye.

Determination of the period and direction of the rotation of Venus from radio astronomical observations. Astron. zhur. 40 no.1:154-157 J-F '63. (MIRA 16:1)

1. Fizicheskiy institut im. P. N. Lebedeva AN SSSR.

(Venus(Planet))

L 27392-65 EWT(d)/FBD/FSS-2/EWT(1)/EWC(k)-2/EWG(v)/EEC-4/EEC(t)/EEC(b)-2/

Kuz'min, A. D.; Salomonovich, A. YE.

Radio-astronomical methods of antenna parameter measurements (Radioastronom-

ment of the electrical axis of antennas, methods of plotting directivity

L 27392-65
ACCESSION NR AM4043705

SUBMITTED: 28Feb64 SUB CODE: EC, AA

L 34496-65 FBD/EWT(1)/EWG(v)/EEC-4/EEC(t) Pe-5/Pae-2/Pi-4 GW/WS-4

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R00092802C

L 34496-65

Card

[illegible] signal attenuation, [illegible] wavelength, radio emission, [illegible]

[illegible]

measured on the [illegible] temperature of the [illegible]

[illegible]

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R00092802O(

ACCESSION NR: AT5012812

(Radio telescopes), 155-166

TOPIC TAGS: radioastronomy

Card 1/2

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R00092802O(

L 45749-65 EEC-4/EWG(v)/EWT(1)/EEC(t)/...
ACCESSION NR. AP501...

... The purpose of the investigation was to relate the results of radio-astronomical measurements of the brightness of Venus with physical parameters of its surface and its atmosphere, such as the ...

... for the individual ...

Card 1/2

L 45749-65
ACCESSION NR: AP5010671

components, under various assumptions concerning the nature of the absorbing [illegible] merical solutions are obtai[illegible] [illegible] phase, and [illegible]

[illegible] for a fruitful discussion of the [illegible] author is grateful to V. [illegible] [illegible] as, and a tables. Orig. art. has: 3 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva AN SSSR (Physics Institute, AN SSSR)

SUBMITTED: 20Apr64 ENCL: 00 SUB CODE: AA

NR REF SOV: 006 OTHER: 007 ATD PRESS: 4001

Card 2/2

L 52044-65

Radioteleskopy

TOPIC TAGS: parabolic cylinder antenna, antenna irradiator, binary feeder, wide band symmetrizer, eight-dipole irradiator, radiotelescope

irradiators

located along the focal line of the parabolic cylinder. It represents a linear

L 52044-65

ENCLOSURE: 01

Card 3/3

VETUKHNOVSKAYA, Yu.N.; KUZ'MIN, A.D.

Some discrete radio emission sources at a wavelength of 9.6 cm.
Trudy Fiz. inst. 28:155-166 '65. (MIRA 18:7)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

waves in the ... cm range

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

L [illegible]-65

[illegible] polarization measure- [illegible]

[illegible] The authors are deeply [illegible]

Card 2/2

KUZ'MIN, A. D., Engr

PA 17/49T30

Nov 48

USSR/Engineering
Metallurgical Plants
Standardization

"Some Problems in the Unification and Standardization of Metallurgical Equipment and Specialization in Factories of the Heavy Machine-Building Industry" A. D. Kuz'min, Engr, TsKBMM, A. A. Korolev, Cand Tech Sci, TsNIITMash, 2 pp

"Vest Mashinostroy" No 11

Discusses prerequisites for introduction of standardization and specialization in steel shops, giving order of priority for their application to various processes.

17/49T30

[redacted]

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R00092802O(

KUZ'MIN, A.D., kand.tekhn.nauk

Selecting basic parameters of roller straightening machines. Obr.met.davl. no.2:253-262 '53. (MIRA 12:10)

1. TSentral'noye konstruktorskoye byuro metallurgicheskogo mashinostroyeniya i TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.
(Rolling mills--Equipment and supplies)

KUZ'MIN, A.D.

KOROLEV, A.A., kandidat tekhnicheskikh nauk; KOGOS, A.M.; TOKARSKIY, A.P, NOSAL', V.V. GUREVICH, A.Ye., SHVARTSMAN, V.F.; KARPOV, V.F.; SHUL'MAN, P.G.; ADAMOVICH, N.K.; CHETYRBOK, F.M.; TSELIKOV, A.I., KUZ'MIN, A.D., kandidat tekhnicheskikh nauk; TIKHONOV, A.Ya., tekhnicheskiy redaktor.

[Blooming mill 1000] Bliuming 1000. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1955. 271 p. (MLRA 8:8)

1. Chlen-korrespondent AN SSSR (for TSelikov) (Rolling mills)

KUZ'MIN, A.D.

USSR/ Engineering - Metal working

Card 1/1 Pub. 128 - 17/35

Authors : Kuz'min, A. D., Cand. Tech. Sc.; Vasil'chikov, M. V., Cand. Tech. Sc.; and Barbarich, M. V., Engineer

Title : Contact fatigue of the teeth of gears made by hot rolling

Periodical : Vest. mash. 35/3, 53 - 56, Mar 1955

Abstract : An account is given of studies made of the microstructure of gear wheels made by the process of hot rolling, a process which has enormously speeded up the production of these wheels. Tests were made by which it was shown that the surface toughening of the teeth of the wheels, resulting from the plastic deformation of the metal during the rolling, considerably increases the resistance of the teeth to fatigue, making them superior to teeth cut on the milling machine. Illustrations; graphs.

Institution : .....

Submitted : .....

Translation W-31656, 20 Feb 56

62 15301* Industrial Production of Cylindrical Gears by Hot Rolling. Iz opyta promyshlennogo proizvodstva tsilindricheskikh zubchatykh koles metodom goriachei prokatki. (Russian.) A. D. Kuz'min and M. V. Vasil'chikov. *Vestnik mashinostroeniia*, v. 35, no. 9, Sept. 1955, p. 41-44.

Wear and strength tests show that the gear teeth of gears thus produced are superior to milled ones. Diagrams, photographs, table, graph.

(1)

KUZ'MIN, A.D., kandidat tekhnicheskikh nauk.

Hot rolling of cylindrical gears. [Trudy] MVTU No.62:37-73 '55.
(Gearing) (Rolling (Metalwork)) (MLRA 9:7)

TSELIKOV, A.I.; KOROLEV, A.A., kandidat tekhnicheskikh nauk; KUZ'MIN, A.D., kandidat tekhnicheskikh nauk; KOGOS, A.M., inzhener; SOLOV'YEV, P.I., inzhener.

Twelve-roll mills for rolling thin strips. Stal' 16 no.6:531-536 Je '56. (MLRA 9:8)

1. Chlen-korrespondent AN SSSR (for TSelikov); 2. TSentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya. (Rolling mills)

SOV/137-57-10-19072

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 10, p 92 (USSR)

AUTHOR: Tselikov, A.I., Korolev, A.A., Kuz'min, A.D., Kogos, A.M., Solov'yev, P.I.

TITLE: Cluster-type Rolling Mills Designed by the TsKBMM of the TsNIITMASh (Mnogovalkovyye stany konstruktsii TSKBMM TsNIITMASh)

PERIODICAL: V sb.: Prokatn. stany: Nr 83 Moscow, Mashgiz, 1956, pp 5-26

ABSTRACT: A 12-roll cluster-type mill for the rolling of thin (down to 0.1-mm) and fine (down to 0.05-mm) strip has been designed by the TsKBMM of TsNIITMASh. The mill has a roll and a pinion stand, coilers ahead and behind, and a tapered uncoiler. The roll stand consists of a parallelepipedal cast-iron housing containing a cylindrical bored hole for the roll (R) adapter and two rectangular openings on the sides for the guides. Upper and lower adapters carry three R each and three shafts with four back-up rolls (BR). Of the three R in each adapter, one is of 38 mm diameter and 350 mm body length, and is a working roll, the other two 45-mm are driven intermediate rolls transmitting

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Cluster-type Rolling Mills Designed by the TsKBMM of the TsNIITMASh

pressure from the working R to the 110-mm diam BR. The latter are mounted without play in the adapter chocks, the upper driving and working R being suspended from the upper chock by springs, so that they are alwys compressed against each other and towaɪd the BR, while the bottom chock lies free in the bottom portion of the housing. The pinion stand represents a combination of types. The mill-stand motor is of 100-kw power and runs at 980-1150 rpm. The mill R are of Nr 12KhN2A steel, the H_{sh} of the working surface being 100-105: the driving rolls are of Nr 20KhN3A steel, with an H_{sh} 95-100; the BR are of Nr 9Kh steel. The rolling rate is 1-5 m sec, and the maximum permissible rolling pressure is 35,000 kg. The working and back-up R have circulating lubrication, machine oil being used. The coilers are located on both sides of the mill stand and make it possible to roll with tension both in front and behind. The maximum tension on the strip is 3600 kg, and the diameter of the coiling drum is 300 mm. The coiler motors are of 81.6 hp each. The weight of the mill is 25 t. The following is the rolling flowsheet. Annealed and pickled coils, 0.2-0.5 mm thick and up to 300 mm wide, of steels 0.8, U7A to U12A, EI142, 20S2, 65G, 50KhFA, and others, are delivered to a conical uncoiler and are mounted thereon by a lift table. The end of the strip goes from the uncoiler through the mill R and is fastened to the drum of the rear coiler. The strip is then placed under tension and the
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SOV/137-57-10-19072

Cluster-type Rolling Mills Designed by the TsKBMM of the TsNIITMASh

rolling rate is increased to the desired level. Before the end of the coil leaves the uncoiler the stand and coiler are switched to servicing speed, and the mill is stopped and reverses itself. The end of the strip is guided into the front coiler and a second pass begins, during which back tension on the strip is provided by switching the coiler motor to generator operation. Rolling continues until 2 or 3 coils are left on the drum of the rear coiler, whereupon the motors are switched to minimum speed, stopped, and reversed for the next pass, etc. The coil of finished strip is taken from the coiler by a special knock-out and is delivered for trimming of the side edges or annealing. 237-mm wide strip of Kh0.5 steel is rolled from 0.37 to 0.105 mm in 6 passes with an 8.7-23% reduction per pass and a single intermediate anneal, R adapters on roller bearings being used. The precision of rolling, based on thickness, for strip not over 0.10 mm thick, is within a tolerance of ±0.005 mm. The average output of the mill is 3.0-3.5 t thin strip per shift.

V.Zh.

Card 3/3

KUZ'MIN, A.D.

PHASE II BOOK EXPLOITATION 494-II

Smirnov, V. S.; Anisiforov, V. P.; Vasil'chikov, M. V.; Granovskiy, S. P.; Kazanskaya, I. I.; Kuz'min, A. D.; Mekhov, N. V.; Pobedin, I. S.

Poperechnaya prokatka v mashinostroyenii (Cross Rolling in the Machine-building Industry) Moscow, Mashgiz, 1957. 375 p. 4,500 copies printed.

Ed. (title page): Tselikov, A. I., Corresponding Member, USSR Academy of Sciences, and Smirnov, V. S., Doctor of Technical Sciences, Professor; Ed. (inside book): Kamnev, P. V.; Ed. of Publishing House: Leykina, T. L.; Tech. Ed.: Sokolova, L. V.; Managing Ed. of the Leningrad Branch of Mashgiz: Bol'shakov, S. A., Engineer.

INTRODUCTION

In this book, which is devoted to the study of cross rolling and helical cross-rolling processes in the Soviet machine-building industry, the authors discuss very systematically and in detail the principles, theory, and technological aspects of roll forming of balls and gears as well as die rolling of periodic shaped stock.

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Cross Rolling in the Machine-building Industry 494-II

The terms cross rolling (poperechnaya prokatka) and helical cross rolling (poperechno-vintovaya prokatka) require a brief explanation here. By cross rolling, the Russians understand a rolling process in which two parallel rolls revolve in the same direction, their longitudinal axes being parallel to the axis of the work. The term helical cross rolling denotes a rolling operation between cone rolls, the axes of which are slightly inclined to opposite angles, thus producing a helical advance of the work. Die rolling in this case is a special type of helical cross rolling in which helically grooved rolls are used, instead of plain tapered ones, to produce shapes such as balls, rollers, annular shapes, periodic profiles, etc. The rolling of bearing balls is said to have already replaced the ball-pressing method in the USSR, increasing productivity 2 to 7 times, and saving 10 to 25 percent in expensive alloy steels. Gear rolling is reported to be a current development project in the USSR. Rolled gears are said to have been successfully produced to grade 3 accuracy with a grade 7 to 10 surface roughness. Methods for determining rolling forces, stresses, torque, and power, based on modern concepts of the theory of plasticity and strength of materials, are discussed, and formulas derived. All the methods involved in these rolling processes are discussed with great clarity, and case histories and specific examples are included. According to the authors, the mechanical

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properties of press-formed parts or of parts machined from periodic rolled stock are considerably higher than those made from conventional plain rolled stock, not to mention a 20 to 30 percent saving in material.

The development of the theoretical principles and the technological processes of cross rolling and helical cross rolling in the USSR is said to have been carried on intensively since 1942. The theory was developed by V. S. Smirnov on the basis of experiments conducted at the Ural'skiy politekhnicheskiy institut (Ural Polytechnic Institute) and later at the Leningradskiy politekhnicheskiy institut (Leningrad Polytechnic Institute). The development of machinery and equipment for cross rolling and helical cross rolling was supervised by A. I. Tselikov at the TsNIITMASh (Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya — Central Scientific Research Institute of Technology and Machinery). Some machine-building plants, e.g., the Gor'kovskiy avtomobil'nyy zavod (Gor'kiy Automobile Plant), have developed cross-rolling mills of their own design. The contents of this book are reviewed below, chapter by chapter.

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Cross Rolling in the Machine-building Industry

ANALYSIS

PART I. GENERAL THEORY OF HELICAL CROSS ROLLING

Ch. I. Deformation and Stress Distribution During Forging, Cross Rolling and Helical Cross Rolling of Round Bodies

The authors discuss deformation, state of stress, and core failure of a round bar during forging (Fig. 2, p. 7 of the book), and during cross rolling with plain and beaded rolls(Fig. 15, card 30). The similarity of the forging and rolling processes is pointed out (although in rolling with beaded rolls additional axial tensile stress comes into play (see Fig. 18, card 30). Helical cross rolling (see Fig. 19A, card 25) is said to be analogous to cross rolling (see Fig. 1B, card 29), insofar as deformation and stress are concerned, and die rolling (Fig. 19B, card 25) is in the same sense analogous to rolling with beaded rolls (Fig. 15, card 30). Some measures which reduce the tendency to core failure, e.g., application of tension and use of three-roll mills, are enumerated. Finally, deformation and stress distribution in hollow periodic profiles (e.g., finned pipes) during die rolling with simultaneous piercing are discussed. The piercing of seamless pipes is also described.

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Ch. II. Basic Regularity Patterns Obtained from Experimental Data in Forging, Cross Rolling and Helical Cross Rolling of Round Bodies

The authors describe the main factors peculiar to the forging process as experimentally determined. The deformation of solid and hollow (thick- and thin-walled) round bodies in cross rolling with plain rolls is also described. The dependence of the ratio between the inner diameter and the outer diameter (I. D. to O. D. ratio) upon the relative reduction of a thick- or thin-walled hollow body in cross rolling is presented in a diagram (Fig. 27, p. 73), and the critical value of this ratio, which forms the dividing line between thick- and thin-walled bodies, is determined to be 0.45. Experimental data for cross rolling of solid cylindrical specimens between beaded rolls and for helical cross rolling of solid and hollow bodies (thick- and thin-walled) in conical rolls without a mandrel are analyzed. These experiments are said to have shown that the critical amount of reduction depends on the temperature and the angle between the rolls, among other factors. In experimental rolling between rolls with helical beads of constant width and of increasing height (Fig. 39, p. 89), the total heavy reduction of the diameter of the rolled piece is said to be about 87 percent, which forms a neck between the periodic sections of the work. (Fig. 41, p. 92). The

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experimental data coincide with the results obtained in forging of cylindrical specimens mentioned at the beginning of this chapter. Experimental data for rolling between rolls with helical beads of trapezoidal cross section, at various temperatures (750-1050°C) and at various roll speeds (40-180 r.p.m.) are also discussed. The author presents an explanation of the fact that the tendency to core failure is considerably reduced by rolling in a three-roll mill instead of a two-roll mill, other conditions remaining equal. In confirmation of this explanation, results are given of experiments with a three-roll mill conducted by G. A. Lifshits and other engineers of the TsKBMM (Tsentral'noye konstruktorskoye byuro metallurgicheskogo mashinostroyeniya — Central Design Office of Metallurgical Machinery) of TsNIITMASh. In conclusion the authors evaluate the results of the above experiments, and present a table showing the influence of the basic factors on the critical reduction in forging and in the various rolling processes.

Ch. III. Analytical Solution of the Problem of Stress Distribution in Forging and in Cross and Helical Cross Rolling of Solid Round Bodies

A study is made of the state of stress at which core failure occurs in rolled work of solid cross section. This study is based on the following assumptions:

1) Cross rolling and helical cross rolling are considered as forging processes, with a small reduction after each blow. 2) The elongation of the forged workpiece is neglected as being insignificant; thus the problem may be treated as a two-dimensional one. 3) The tangential stresses $\tau_{\rho\theta}$ are zero at the center of the cross section and increase to maximum along the periphery of the work, but still remain smaller than the difference of normal stresses $\sigma_\rho - \sigma_\theta$. 4) The cross section may be thought of as consisting of two concentric cylinders: a plastic shell and an elastic core. 5) The shell is regarded as being perfectly plastic, and the difference of normal stresses $\sigma_\rho - \sigma_\theta = 1.15\,\sigma_s$ (Eq. 2 III, p. 110), where σ_s is the yield stress of the workpiece. 6) At the moment when the core is on the verge of failure the difference of normal stresses in the center is $\sigma_\rho - \sigma_\theta = 0$, whereas along the periphery of the elastic core (the so-called critical radius) this difference is equal to $1.15\,\sigma_s$.

With the aid of these assumptions the authors determine the tangential stresses in the shell and in the core (Eq. 25. III, p. 114), and the normal stresses in the shell and in the core at which the core begins to fail (Eq. 26. and 27. III, p. 114). Then, using the theory of flat sections, they determine the critical stresses for the parts of the cross-sectional area adjacent to the arc of

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contact between the work and the rolls (Eq. 34. to 36. III, p. 118). These stresses are shown in a diagram (Fig. 3a, p. 120). For the rest of the cross-sectional area, the tangential stresses $\tau_{\varphi\theta}$ are equal to zero. The normal stresses in the shell and in the core are determined (Eq. 40. and 40a. III, p. 121), and shown in a diagram (Fig. 3б, p. 120). The zones of propagation of plastic forging deformation are determined (Eq. 42. III, p. 124) and shown in a diagram(Fig. 5, card 26) . The macrostructure of an aluminum specimen (Fig. 6, p. 125) after one-blow reduction of 4 percent and recrystallization by annealing (according to Zibel') confirms the good agreement between theory and experiment. The equation for the critical radius is derived (Eq. 45. III, p. 127). Using the equations derived for the forging process for tangential and normal stresses in the plastic shell and in the elastic core (when the core begins to fail), the same stresses are then calculated for cross rolling (taking into account the boundary conditions adapted to the rolling process). Equations for tangential and normal stresses acting in the plastic shell and the elastic core before the work enters the rolls and after it leaves the rolls are derived (Eq. 58. to 63. III, p. 131-32). These stresses are shown in a diagram (Fig. 3б, p. 120).

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The relationship between shear stresses and the frequency of hammer blows in forging (the phenomenon of steel relaxation), and the effect of the external tensile force on the state of stress in helical cross rolling, are pointed out. A nomogram based on experimental data to determine the deformation of the work-piece during cross rolling with plain-surface rolls is presented. A method is given for determining the critical amount of reduction for carbon steel (Eq. 74. III, p. 140), corresponding to the initial stage of core failure, and an empirical formula (Eq. 75. III, p. 140) for determining the volume of the cavity formed during rolling of carbon steel is also presented.

Ch. IV. Analytical Solution of the Problem of Stress Distribution in Cross and Helical Cross Rolling of Hollow Bodies

To solve the problem of the state of stress in rolling of hollow bodies the following assumptions are made: 1) and 2) as in Chapter III, above. 3) The material is perfectly plastic and the difference of normal stresses $\sigma_\rho - \sigma_\theta = 1.15\,\sigma_s$ (see assumption 5) in Chapter III). The tangential stress $\tau_{\rho\theta}$ is small as compared to $1.15\,\sigma_s$. 4) In rolling thick-walled hollow bodies, the outer layer (the shell) is rolled out on the inner layer, i.e., the deformation is not uniform along the wall thickness, and there is within the cross section a cylindrical

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surface with a radius r′ (Fig. 1A, card 26), where the radial deformation is equal to zero (Fig. 29, card 27). 5) In rolling a thin-walled body on a mandrel (see Fig. 1B, card 26), the wall is compressed between the rolls and the mandrel, and the deformation within the wall is more uniform. 6) In rolling an extra-thin-walled body the state of stress is determined by bending deformation.

With the aid of these assumptions, using the solution of the two-dimensional problem from Chapter III, and taking into account respective boundary conditions, the tangential and the normal stresses are determined for the shell and for the inner layer of the workpiece (Eq. 19. IV, p. 146 and 31. IV, p. 148). The results are presented in stress diagrams (Fig. 3, p. 150). The behavior of hollow bodies during rolling is examined, i.e., the decrease of wall thickness following an increase of the I.D. to O.D. ratio for thick-walled bodies, and the increase of the wall thickness, following a decrease of the I.D. to O.D. ratio for thin-walled bodies. The critical value of the I.D. to O.D. ratio, which is the boundary between the concepts of thick-walled bodies and thin-walled bodies, is said to be 0.45 (Fig. 27, p. 73). To determine the stresses when rolling thin-walled bodies without a mandrel, a simplified theory is developed, inasmuch as the deformation within the wall is nearly uniform. Using the solutions obtained

for thick-walled bodies and adapting the boundary conditions for inner and outer surfaces to assumption 5), the tangential and the normal stresses are determined (Eq. 37. IV, p. 157). In rolling thin-walled bodies on a mandrel, the deformation within the wall becomes uniform, as mentioned above, and therefore it is no longer necessary to consider the wall as consisting of a shell and a hollow core. An element of the wall may be treated instead as an element of a plate. Thus, using simplified boundary conditions, the normal and the tangential stresses are again determined (Eq. 49. IV, p. 161), as shown in the diagram in Fig. 9, p. 162. The process of wall deformation in rolling of extra-thin-walled bodies is characterized by prevailing bending stresses. An approximate theory of the rolling process is given and the results are illustrated in a stress diagram (Fig. 10, p. 164). It is experimentally established that at an I.D. to O.D. ratio equal to 0.825, the rolling process is almost fully determined by bending stresses only (Fig. 27, p. 73).

PART II. HELICAL ROLLING IN SHAPE ROLLS [DIE ROLLING]

Ch. V. Technological Process and Equipment for Die Rolling

This chapter deals with the technology and equipment of die-rolling mills. Two machines for rolling bearing balls of 25-45 mm. diameter and 25-55 mm. diameter

card 24, contains partial data showing the production qualities of rolled balls. Since the rolling tolerances are far smaller than tolerances obtained in press forging of bearing balls, considerable savings in material are possible. The ball-rolling method used for manufacture of 1 1/16 to 1 1/8-inch diameter balls showed an increase in productivity of 2 to 3 times in comparison to hot pressing, and required 10 to 15 percent less material. When ball rolling replaced forging of 1 1/2 to 2-inch diameter balls the required labor input was reduced to 1/6 to 1/7 of the labor required for ball forging and there was a 20 to 25 percent saving in material.

The helical roll pass for ball rolling consists of two sections: the forming section, where the work is gripped by the rolls and is roughly formed, and the finishing section, where the roughly shaped ball is rolled into a sphere, sized, and separated. The rolled balls are then quenched in water, or in air in the case of alloy steel. Rolls of 200-220-mm. diameter are used for making 1 to 1.5-inch balls, and 280-300-mm. diameter rolls for 1.5 to 2-inch balls. The developed length of the helical pass is expressed in degrees. The total length is 1170° to 1350°; the forming section covers 360° to 540°, and the finishing section about 810° (including 270° before the bead starts). Formulas are

derived for the design of the roll pass and a specific design example is presented. Mill balls do not require any machining after rolling, as the accuracy and surface quality requirements are of lower order than those for bearing balls. Ball rolling is reported to have replaced press forging of balls in the USSR. The first experiments are said to have started as long ago as 1939-41 by TsBTM (Tsentral'noye byuro tyazhelogo mashinostroyeniya — Central Office of Heavy Machine Building) together with the first GPZ (Gosudarstvennyy podshipnikovyy zavod — State Bearing Plant), but it was only in 1944 that development of this method was resumed in TsNIITMASh under the management of A. I. Tselikov. In 1954 another mill was built to produce balls of 25 to 55-mm. diameter. From that time on, the pressing of large balls has been replaced by the new rolling method. The rolling of 40-mm. diameter mill balls was first introduced in 1949 in the metallurgical plant "Serp i molot" under the auspices of TsNIITMASh. In 1954 a mill was built for 40 to 60-mm. balls and another mill for 40 to 80-mm. balls. Cold rolling of small balls 1 to 4 mm. in diameter is performed either in a manner analogous to hot rolling, or in ring-type passes (instead of helical ones). In the latter case the forming and finishing sections each consist of an annular groove joined by a connecting groove (Fig. 36, p. 222). This rolling method is still in the developmental stage and requires many improvements before it can be applied on an industrial scale.

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Cross Rolling in the Machine-building Industry 494-II

Rolling of barrel-shaped rollers for spherical bearings is said to be still in the experimental stages. A schematic diagram of a laboratory rolling mill for rolling barrel rollers is presented (Fig. 40, p. 226). The design of roll passes is discussed and illustrated in Fig. 41-45, pp. 227-232. This chapter also treats die rolling with a mandrel of shaped periodic tubular stock (finned pipes) in three-roll mills (Fig. 46, p. 234). The work is preheated to 900-1200°C. The authors also discuss some of the defects encountered in products rolled by this method (Fig. 49, p. 237) and suggest basic formulas for roll design. On the basis of extensive experiments, this process was fully developed, and the profiled tubular stock obtained from this process meets all dimensional amd quality requirements, even to the extent that subsequent machining of the rolled product becomes unnecessary in some cases. This process of die rolling of profiled tubular stock is far more efficient than the old method of press forging, and is said to give better dimensional accuracy with a 20-40 percent saving of metal. This process is also suitable for mechanization and automation and is reported to find wide potential application in plants for the mass production of annular parts.

The preforming by rolling of billets for forging of connecting rods for automobile engines was introduced in 1949 at the Gor'kovskiy avtomobil'nyy zavod

Card 15/30

imeni V. M. Molotova (Gor'kiy Automobile Plant imeni V. M. Molotov), under the supevision of A. F. Balin. The initial diameter of rolls in a two-roll mill is 500 mm. The motor requires 46.5 kw. at 1000 r.p.m. The speed of rolls is 25 r.p.m. The rolls may be adjusted in the vertical plane from 0° to 7 1/2° and in the horizontal plane from 0° to 4°. The initial surfaces of the rolls have the shape of a hyperboloid of revolution (Fig. 58, p. 245). Roll-design methods are suggested for designing of the roll surface. The output of the mill is said to be 1000 to 1200 pieces per hour. The mechanical properties of the connecting rods produced by this method are better than those of rods produced by the old press-forging method (Fig. 59, p. 247). It is also claimed that savings in material amount to 10-20 percent, productivity is doubled, and man-hours cut by 30 percent.

Ch. VI. Kinematics, Pressure on Rolls, Moments and Power of Rolling in Helical Shape Rolls [Die Rolling]

The author investigates the grip and slip conditions of the work between the rolls, and derives formulas for calculating the total rolling pressure and torque. Experiments conducted in a laboratory on a two-roll mill with two

rolled products. Tables 2 and 3 on p. 287 show savings of material achieved by using this rolling method. Advantages and disadvantages of disc and cone rolls are discussed, and a graphic design method for the tracer templet of a copying arrangement is given. The accuracy of the rolled product is said to depend on the accuracy of the copying arrangement, on the rigidity of the mill stand itself, temperature variations, rolling speeds, roll wear, and the experience of the operators. The deviations of rolled parts from nominal dimensions are generally plus or minus 1.0 percent, and not less than plus or minus 0.5 percent in length. Table 5 on page 294 contains the results of a series of measurements made on a half-axle and a camshaft of the "Moskvich" automobile.

Ch. VIII. Pressure on Rolls, Moments and Power in Rolling on Three-roll Mills

The external axial tensile force acting on the work is determined. The effect of various factors such as rolling speed, angle between the rolls, rate of feed, the workpiece diameter and its reduction coefficient, and temperature, is discussed (Fig. 1-10, pp. 297-301). Empirical formulas for determining these factors and the tensile force are presented. Formulas for the contact-area rolling pressure, torque, and power required are derived (Eq. 16., 18., 21., and 25. VIII, pp. 307-310). The influence of the above-mentioned factors on power consumption is discussed.

Cross Rolling in the Machine-building Industry 494-II

As long ago as 1943-44 V.S. Smirnov first conducted experiments with cross rolling of gears at the Ural Polytechnic Institute. In 1952 a mill designated TsKBMM-22 was built and set up in the "Krasnyy metallist" Plant in Konotop, and was used to roll gears of diameters up to 200 mm. with a module of 3 mm. This mill turned out several hundred thousand gears (6000 per shift). A mill at the Kirovskiy traktornyy zavod (Kirov Tractor Plant) in Chelyabinsk, designed to produced gears of diameters up to 600 mm. with a module of 10 mm, is said to be undergoing improvements. The Nauchno-issledovatel'skiy institut tekhnologii i organizatzii proizvodstva (Scientific-research Institute for Technology and Organization of Production) began cold rolling of nonferrous gears with a small module (up to 1 mm.). Accuracy is said to be of grade 2, and surface roughness of grade 7 to 10. The text contains a description and a diagrammatic layout of a mill installed in the "Krasnyy metallist" plant (Fig. 2 and 3, p. 318-319).

A description is given of both gear-forming methods, that with radial advance of gear-forming tools and that with axial feed of the work. Fig. 4, p. 321, shows a set of gear blanks and gears formed by the latter method. The application of those methods, roll design, and the setup of these mills is extensively treated. When the accuracy of the rolled gears is sufficient for the purpose

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the metal flow. The optimum speed for gears with a module up to 3 mm. is 3 to 5 m./sec.; the rate of advance of gear-forming tools is .05 to .3 mm. per each half-revolution of the workpiece. The author describes the phenomenon of unequal forming of the tooth sides (Fig. 14, p. 337), and to remedy this drawback he recommends a high rate of feed and lubrication with a thick mixture of graphite and spindle oil. Imperfections in tooth tops are said to be the result of improperly chosen diameters of blanks. The correct diameter is difficult to calculate exactly, and must be established by trial and error. Table 7 on p. 340 contains the measurement data for roll-formed gears from which it can be determined that these gears are of grade 3 accuracy. The surface roughness is of grade 6 to 7, i.e., higher than that of cut gears.

A great advantage of roll forming is that the fibers of the metal are not cut but follow the contours of the tooth (Fig. 17, p. 341), which results in higher strength. It has been experimentally established that roll-formed teeth are stronger than those formed by machining and grinding operations.

Ch. X. Kinematics, Pressure on Rolls, Moments and Power of Spur-gear Rolling

Formulas are derived for the tangential and radial flow of metal, for the determination of the angle of bite at the beginning and at the end of rolling, for

the contact area between the rolls and the work, for the rolling pressure applied, and for torque on the roll shaft. The results of experiments carried out for the determination of forces, torque, and power required during roll forming of gears by the two methods, are presented in Tables 1 to 5, pp. 364-67, from which certain conclusions may be drawn and briefly summarized in the following table:

Rolling Conditions	Gear-shaping Method	
	Bar Stock (axial feed of work)	Seperate Blanks (Radial feed of tools)
Pressure exerted on rolls in kg.*)	380-1150	700-2200
Power consumption in kw.	5-10	7-15.3
Torque in kg./m.	75-150	85-195

*) A tendency toward pressure increase can be noted with the increase of work diameter. An increased rate of advance increases pressure, power consumption, and torque.

An arrangement used for these experiments is shown in Fig. 6, p. 362.

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KUZ'MIN, A.D.

SOV/122-58-6-32/37

p. 6

AUTHOR: Korolev, A.A., Candidate of Technical Sciences

TITLE: Development Prospects for the Manufacture of Metallurgical Equipment (O perspektivakh razvitiya metallurgicheskogo mashinostroyeniya)

PERIODICAL: Vestnik Mashinostroyeniya, 1958, Nr 6, pp 80-82 (USSR)

ABSTRACT: A branch conference on metallurgical engineering plant, convened at the Uralmashzavod in Sverdlovsk by the Otdel mashinostroyeniya Gosplana (Mechanical Engineering Division of the State Planning Commission of the USSR) is reported. 400 delegates representing 22 economic councils, 14 research institutes, 24 design institutes and 29 metallurgical equipment manufacturing plants were present (including the Uralmashzavod, the Novo-Kramatorskiy zavod (Novo-Kramatorskiy Works), Staro-Kramatorskiy mashinostroitel'niy zavod (Staro-Kramatorskiy Plant), Elektrostal'skiy zavod tyazhelogo mashinostroyeniya (Elektrostal' Plant), the Yuzhno-Ural'skiy zavod tyazhelogo mashinostroyeniya (Yuzhno-Ural'skiy Plant), the Irkutskiy mashinostroitel'nyy zavod (Irkutsk Plant), the Novosibirskiy mashinostroitel'niy zavod (Novosibirsk Plant)) as well as 16 steel Works (including the Magnitogorskiy metallurgicheskiy kombinat, the Azovstal',

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the Zaporozhstal', the Novo-Tagil'skiy Works, Kuznetskiy metallurgicheskiy kombinat (Kuznetsk Metallurgical Combine). In his opening address, Ye.S. Novoselov, Minister of the USSR, emphasised that the State Planning Commission attached great importance to the conference. Vinogradov, K.K., deputy director of the mechanical-engineering division of the State Planning Commission, pointed out that the production of metallurgical equipment increased 16-fold in the period between 1932 and 1957. The manufacture of rolling-mill equipment increased 24-fold. Between 1951 and 1957, 27 blast furnaces, 57 open-hearth furnaces, 35 rolling and tube mills were built and erected and 22 rolling mills were completed, awaiting erection. This equipment was responsible for an increase of 18.2 million tons of pig iron, 24.9 million tons of steel and 19.3 million tons of rolled products. An improvement in quality and a rise in productivity have taken place. During the period between 1959 and 1965, the manufacturers have the task of constructing powerful blast furnaces of 1 719 m^3 and even 2 286 m^3 capacity, the largest in the world. New designs of automatic skip hoists, weighing carriages, charging

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Development Prospects for the Manufacture of Metallurgical Equipment

machines, spout-closure guns and others must be developed. New charging machines for steel melting plant with a load capacity of 15 tons, powerful ladle cranes, converters and other equipment should be designed. A great increase in quantity of rolling-mill equipment is foreseen. Completely mechanised and largely automated rolling mills are planned, primarily sheet mills, rolled section mills and tube mills with continuous rolling, mills for the production of bent profiles and recurrent sections. Several powerful blooming and slabbing mills with an output of 3.5-4.5 million tons each must be erected and several continuous rolling mills for plate, sections, sheet and tubes. The task set is the production of over 100 million tons of steel per annum by 1972. The two chairmen of the State Planning Commissions of the Russian and Ukrainian Republics, I.Z. Shlykov and V.A. Yanchilin, reported on the planned specialisation among metallurgical equipment manufacturing plants and urged co-operation between constructors. Tselikov, A.I., Corresponding Member of the Ac.Sc.USSR, director of the design office for metallurgical-engineering at the TsNIITMASh read a paper on the basic trends of technical development and

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research foreseen between 1959-1965. A relative increase in the proportion of sheet among rolled products is envisaged. Special attention must be devoted to the construction of sheet mills, particularly those with a roll length of 1 700 - 2 100 mm. A sharp increase (3-4-fold) in the production of welded tubes for gas and oil pipe lines is needed and hence the manufacture of many new tube welding machines. Sections, sheet and thin-walled tubes of heat-resisting steels, titanium and other metals will be increasingly needed and will require new rolling mills and presses. Special products for steel economy such as "economic" sections, thin-walled and variable section tubes, rolled railway axles and cold-rolled bent profiles will require special production equipment. The manufacture of mills for the rolling of gear wheels and worms, the rolling of balls and other products will need increasing attention. These special machines will release many ordinary mills and presses and will yield much economy of metal. The need to increase the continuity of rolling processes was stressed involving the butt-welding of metals, the association of rolling mills with machines for the continuous casting of

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Development Prospects for the Manufacture of Metallurgical Equipment

metal and an increase in the degree of automation of rolling mills. The creation of a research institute for metallurgical equipment at Sverdlovsk based on the TsNIITMASh Branch and the "Uralmetallurgavtomatika" laboratory was urgently required. N.P. Prokhorov, A.M. Rybal'chenko, the chief specialists in the heavy-engineering division of the State Planning Commission of the USSR discussed in their paper the design and manufacturing programme of blast furnace, steel-making and rolling-mill equipment. Soviet designers have created new equipment for high-capacity, blast furnaces, open-hearth furnaces of 450 tons capacity and over, new types of blooming mills, rail-section mills, sheet mills and tube mills. This equipment is said to improve on foreign equipment in its technical and economic performance. Even greater capacities and outputs are required in the future which will call for a clear specialisation of design work at various plants. Ye.G. Osipov, chief engineer of the Giprotyazhmash, dealt with the problem of specialisation. He elucidated the large returns expected of specialisation in reducing the cost of production.

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These problems were further considered in detail in the paper delivered by Yemel'yanov, chief engineer of the Vsesoyuznyy proyektno-tekhnologicheskiy institut po tyazhelomu mashinostroyeniyu (All-Union Design and Production Institute for Heavy Engineering). In the papers by A.V. Istomin, director of the rolling-mill section of the Gipromez (State Institute for Metallurgical Plant Projects) and B.P. Bakhtinov, Candidate of Technical Sciences, director of the rolling-mill laboratory of the TsNIIChERMET, the development prospects of rolling-mill production in ferrous metallurgy during 1959-1965 were discussed and the concrete tasks facing equipment manufacturers in creating new rolling mills and continuous units for the finishing of rolling-mill products were established. A.D. Kuz'min, Candidate of Technical Sciences, chief engineer of the TsNIITMASh, elucidated the fundamental problems in the introduction of new techniques in rolling-mill equipment during 1959-1965, facing both his office and the production plants. Special attention was devoted to product finishing processes which hitherto have not been sufficiently mechanised either in Russia or abroad. Korolev, A.A.,

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S V/12 -38-6-32/37

Development Prospects for the Manufacture of Metallurgical Equipment

Candidate of Technical Sciences, administering the chair of mechanical equipment in metallurgical plants at the Moscow Evening Institute for Metallurgy, reported on his impressions when visiting metallurgical and engineering plants in England, Western Germany, France and other countries, together with a group of other Soviet specialists. D.I. Berenov, Candidate of Technical Sciences, chief engineer of Uralmashzavod, V.I. Glazyrin, director of the Novo-Kramatorskiy mashinostroitel'nyy zavod (Novo-Kramatorskiy Engineering Plant), Ye.F. Dotsenko, director of the Staro-Kramatorskiy zavod (Staro-Kramatorskiy Works), N.L. Dubrovin, deputy director of the Elektrostal' Plant of heavy engineering and others reported on the technical development trends in their plants. In the papers read by the chief designers of these plants, G.L. Khimich, M.I. Shinkarenko, V.L. Shvayun, V.M. Yampol'skiy, A.B. Vernik, I.I. Dobroskok, V.M. Kolesov and others, various deficiencies in the organisation of designing metallurgical equipment and its early commissioning were indicated. Proposals were made to evolve a long-term plan for the design and construction of new rolling mills in the coming 7-10 years, to establish

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a system of mutual financial responsibility covering both the ordering and supplying organisations for maintaining schedules in designing, manufacturing and commissioning of new rolling mills, to improve co-operation with the Gipromez and its branches, to develop a system of evaluation of the degree of merit of the equipment produced, to discontinue planning the production of equipment in terms of tonnage which fails to provide an incentive for producing more economical machines, to simplify the approval procedure for machine projects, etc. A number of papers were devoted to the problems of creating and improving the main electrical drives, the regulating and automation apparatus and the problems of integrated automation in the operation of metallurgical plant, namely, the papers by Tishchenko, N.A., chief engineer of the central design office of the "Elektroprivod" Works, V.I. Krupovich, chief engineer of the Tyazhpromelektroproyekt, E.Yu. Gutnikov, director of the "Uralmetallurgavtomatika" laboratory, M.I. Reyfisov, department head of TsNIITMASh and A.S. Filatov, laboratory administrator, and others.

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Development Prospects for the Manufacture of Metallurgical Equipment

Concrete suggestions were made for improving the work of research institutes and laboratories concerned with automation institutes and labomatories concerned with automation development. In the resolutions of the conference, most of the points mentioned above were taken into account.

1. Industrial plants--Equipment 2. Industrial equipment--Production

Card 9/9

BK

PHASE I BOOK EXPLOITATION SOV/5948

Kuz'min, A. D., Candidate of Technical Sciences, ed.

Sovremennoye sostoyaniye prokatnogo mashinostroyeniya (The Present State in the Manufacture of Rolling Equipment) Moscow, Mashgiz, 1961. 318 p. 4000 copies printed.

Sponsoring Agency: Kollektiv sovetskikh i chekhoslovatskikh avtorov.

Ed.: G. M. Makovskiy; Ed. of Publishing House: L. A. Osipova; Tech. Ed.: V. D. El'kind; Managing Ed. for Literature on the Hot-Working of Metals: S. Ya. Golovin, Engineer.

PURPOSE: This book is intended for technical personnel of machine-building and metallurgical plants.

COVERAGE: The book describes the present state in the manufacture of rolling equipment in the USSR and the Republic of Czechoslovakia. Presented are new designs of blooming and slabbing mills, billet mills, sheet and plate mills, tube-rolling mills,

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S/122/62/000/005/004/C04
D234/D308

AUTHOR: Kuz'min, A.D., Candidate of Technical Sciences

TITLE: On the developmental trends in the technological process of manufacturing cylindrical gears by rolling

PERIODICAL: Vestnik mashinostroyeniya, no. 5, 1962, 68 - 71

TEXT: The author discusses the cost of various methods of gear manufacture. Hot rolling combined with mechanical working is found to be less expensive than mechanical working only. The least expensive method consists in rolling the blank after stamping, when it is still hot, first on smooth rolls and then on toothed rolls, which is followed by annealing, pickling and mechanical working. Preliminary turning and preliminary tooth cutting would be eliminated. There are 5 figures and 3 tables.

Card 1/1

ACC NR: AP6017952 (A) SOURCE CODE: UR/0413/66/000/010/0015/0015

AUTHOR: Gorshkov, V. N.; Platov, V. P.; Kuz'min, A. D.; Mukonin, V. F.

ORG: None

TITLE: A method for rolling pipes on a planetary mill. Class 7, No. 181593 [announced by the All-Union Scientific Research Institute for Design and Planning of Metallurgical Machine Building]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 10, 1966, 15

TOPIC TAGS: pipe, rolling mill, metal rolling

ABSTRACT: This Author's Certificate introduces: 1. A method for rolling pipes on a planetary mill. Pipes of large diameter are rolled by deformation of the pipe during the rolling process along the surface of rollers of a length and diameter considerably less than those of the pipe to be rolled and independent of the pipe diameter. 2. A modification of this method in which pipes with a given number of fins on the outer surface are produced by using rollers with a worm thread which are kinematically connected to the mechanism for rotating the pipe.

SUB CODE: 13/ SUBM DATE: 23Apr64

UDC: 621.771.064;621.774.3-417.2

Card 1/1

L 46578-66 EWT(1)/FCC WS-2/RB/GW

ACC NR: AP6025214 SOURCE CODE: UR/0033/66/043/003/0692/0694

AUTHOR: Kuz'min, A. D.; Dent, W.*

14 B

ORG: /Kuz'min/ Physics Institute im. P. N. Lebedev, AN SSSR (Fizicheskiy institut AN SSSR); /Dent/ Radioastronomical Observatory, University of Michigan, U. S. A. (Radioastronomicheskaya observatoriya Michiganskogo universiteta S. Sh. A.)

TITLE: Measurements of the brightness temperature and polarization of Venusian radio emission at 3.75 cm

SOURCE: Astronomicheskiy zhurnal, v. 43, no. 3, 1966, 692-694

TOPIC TAGS: Venus planet, solar radio emission, temperature measurement, measuring apparatus, radio telescope

ABSTRACT: This is a bief description of the apparatus used and the results of measurements of the brightness temperature and polarization of the integral radio emission of Venus at 3.75 cm. The observations were made in August-September 1964 with the 26-m radio telescope of Michigan University. At the phase angle $\phi = 85°$ the brightness temperature of Venus was found to be 659 ± 65°K. The upper limit of the polarization of the integral radio emission of Venus is 1%. A study also was made of the polarization of the radio emission of the discrete sources 3C 123 and 3C 273, for which the degree of polarization and the position angle were found to be 4.0% and 1.8% and 160° and 160° respectively. The authors are grateful to Professor F. Kheddok, the personnel of the Radioastronomical Observatory and especially to Dzherri Eyman and Mayk Kleyn for their help in conducting the observations. /JPRS: 36,794/

SUB CODE: 03, 20 / SUBM DATE: 24Jan66 / ORIG REF: 001 / OTH REF: 006

Card 1/1 hs UDC: 523.42

0416 0580

KUZ'MIN, A.D., KLARK, B.Dzh. [Clark, B.G.]

Measuring the polarization and brightness temperature distribution of Venus at a wavelength of 10.6 cm. Astron. zhur. 42 no.3:595-617 My-Je '65. (MIRA 18:5)

1. Fizicheskiy institut im. P.N.Lebedeva AN SSSR i Radioastronomicheskaya observatoriya Ouens Velley Kaliforniyskogo tekhnologicheskogo instituta, SShA.

KUZ'MIN, A.D.

Measurements of the brightness temperature of the illuminated side of Venus taken at a wavelength of 10.6 cm. Astron. zhur. 42 no.6: 1281-1286 N-D '65. (MIRA 19:1)

1. Fizicheskiy institut im. Lebedeva AN SSSR. Submitted May 11, 1965.

KUZ'MIN, A.D., kand. tekhn. nauk.

Calculating forces and moments acting on rolls in rolling gear wheels. Vest. mashinostr. 45 no.7:13-17 Jl '65. (MIRA 18:10)

SHULYUMOVA, Ye.S., professor; KUZ'MIN, A.F., assistent; FED'KO, P.A., ordinator.

Influence of tissue extracts on lactation in cows in foot-and-mouth disease. Veterinariia 33 no.2:27-30 F '56. (MLRA 9:5)

1. Odesskiy sel'skokhozyaystvennyy institut.
(FOOT-AND-MOUTH DISEASE) (TISSUE EXTRACTS) (LACTATION)

KUZ'MIN, A. F. Cand Biol Sci -- "Effect of tissue preparations manufactured by the method of Academician V. P. Filatov upon the secretory, absorptive, and motor activity of the stomachs of dogs." L'vov, 1960 (Min of Agriculture UkSSR. L'vov Zoovet Inst). (KL, 1-61, 188)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

KUZMIN, A. G. Cand. Biolog. Sci.

Dissertation: "Pike-Perch of the Northern Caspian Sea." Moscow Technical Inst of Fish Industry and Economy imeni A. I. Mikoyan, 13 Jun 47.

SO: Vecherniaya Moskva, Jun, 1947 (Project #17836)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

KUZ'MIN, A.G., kand.biol. nauk

Fluctuations in the stocks of Northern Caspian pike perch [with summary in English]. Trudy VNIRO 34:87-95 '58. (MIRA 11:9)

1.Kaspiyskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta morskogo rybnogo khozyaystva i okeanologii.
(Caspian Sea--Perch)

KUZ'MIN, A.G., kand.biol. nauk

Composition of spawning populations of the Volga and Ural pike perches as related to their biological characteristics [with summary in English]. Trudy VNIRO 34:96-101 '58. (MIRA 11:9)

1.Kaspiyskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta morskogo rybnogo khozyaystva i okeanologii.
(Volga River--Perch) (Ural River--Perch)

KUZ'MIN, A.G.

Long-range variations in the composition and strength of the pike perch stock of the Volga River. Trudy sov. Ikht. kom. no.13:414-419 '61. (MIRA 14:8)

1. Kaspiyskiy nauchno-issledovatel'skiy institut rybnogo khozyaystva i okeanografii - KaspNIRO.
(Volga River--Perch)

KUZ'MIN, A.G.

Estimating the stocks of pike perch by catches of a research trawl. Vop. ikht. no.17:47-55 '61. (MIRA 14:5)

1. Kaspiyskiy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii (KaspNIRO).
(Caspian Sea--Perch)

KUZ'MIN, A.G.

Development of stock of the North Caspian sturgeon Acipenser stellatus. Trudy VNIRO no.54:169-174 '64.

(MIRA 18:2)

1. Kaspiyskiy nauchno-issledovatel'skiy institut morskogo rybnogo khozyaystva i okeanografii.

KUZ'MIN, A.I.

Sudden death as a cause of a transport accident. Sud.med.ekspert. 6.no.2:54-55 Ap-Je '63. (MIRA 16:7)

1. Kirovogradskoye oblastnoye byuro sudebnomeditsinskoy ekspertizy (nachal'nik L.Ye.Barkhash).
(DEATH) (TRAFFIC ACCIDENTS)

KUZ'MIN, A.I.

Some data on the characteristics of injuries due to motor-cycling. Sud.-med. ekspert. 6 no.4:6-18 O-D'63 (MIRA 16:12)

1. Kirovogradskoye oblastnoye byuro sudebnomeditsinskoy ekspertizy (nachal'nik L.Ye. Barkhash).

VINOGRADOV, V.I., kand. tekhn. nauk; KUZ'MIN, A.I., inzh.

Study of built-in centrifugal fans of electrical machines. Elektrotekhnika 36 no.5:43-45 My '65. (MIRA 18:5)

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L 15936-66 EWT(1)/FCC/EWA(h) GW

ACC NR: AT6003523 SOURCE CODE: UR/3184/65/000/007/0018/0026

AUTHOR: Krymskiy, G. F.; Kuz'min, A. I.; Skripin, G. V.

50
B

ORG: none

TITLE: Variations in cosmic rays and some characteristics of interplanetary space

SOURCE: AN SSSR. Mezhduvedomstvennyy geofizicheskiy komitet. Kosmicheskiye luchi, no. 7, 1965, 18-26

TOPIC TAGS: cosmic ray, diurnal variation, magnetic field, cosmic ray anisotropy

ABSTRACT: The principal characteristics of variations in primary cosmic rays are studied on the basis of IGY-IGC-59 materials. The effect of the interplanetary radial magnetic field on the diffusion of solar cosmic rays is discussed together with the propagation of cosmic rays in magnetic traps and the Forbush decrease. The anisotropy of cosmic rays in the interplanetary magnetic field revealed by the 11-year cosmic ray cycle is analyzed. The results of this study are used as a basis for constructing a model of the interplanetary magnetic field and for determining its basic parameters. A diagram is given showing the lines of magnetic force for

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ACC NR: AT6003523

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the interplanetary field and the direction of the density gradient for the cosmic rays as well as the direction for the vector of anisotropy. The properties of bursts of cosmic rays and diurnal variations show that this is a radial field resembling the solar dipole field intensely prolate in the equatorial plane with a magnetic moment having the same direction as on the earth. Analysis of experimental data indicates that this interplanetary magnetic field should have a field intensity of approximately 6γ on the orbit of the earth. An examination of Forbush effects and the bursts of cosmic and subcosmic rays which accompany them indicates that there are magnetic traps expanding outward from the sun in which the cosmic rays are effectively retarded. There may be a considerable gradient in the cosmic rays in a direction perpendicular to the plane of the ecliptic. Orig. art. has: 2 figures, 2 tables, 10 formulas.

SUB CODE: 08/ SUBM DATE: 00/ ORIG REF: 019/ OTH REF: 010

04/

FW

Card 2/2

USSR/Nuclear Physics - Cosmic rays in meteorology FD 417

Card 1/1 Pub. 147-3/16

Author : Dorman, L. I.; Kuz'min, A. I.; Tyanutova, G. V.; Feynberg, Ye. L.; Shafer, Ya. G.

Title : Variations in the intensity of cosmic rays and the role of meteorological factor

Periodical : Zhur. eksp. i teor. fiz. 26, 537-544, May 1954

Abstract : Briefly expound the results of an experimental and theoretical study of the influence of meteorological factors on the observed (at sea level) intensity of the hard component of cosmic rays. Show that knowing the distribution of temperature in the atmosphere above the observation point one can allow for the meteorological factors with an accuracy up to 0.1 to 0.2% in the intensity of cosmic rays. Here the remaining divergence lies within the limits of error of the given meteorological sounding. It turns out that the seasonal variations in the intensity of the hard component are due to meteorological factors. The daily variations are essentially masked by these factors.

Submitted : October 27, 1953

KUZ'MIN, A.I.

Daily variations in the global intensity of the hard component of cosmic rays based on data of the Yakutsk Station. Trudy IAk. fil. AN SSSR. Ser. fiz. no.1:11-18 '55. (MLRA 9:10)

(Cosmic rays)

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KUZ'MIN, A.I.; SKRIPIN, G.V.

Correlation of semidiurnal variations in the intensity of the hard component of cosmic rays with semidiurnal fluctuations of barometric pressure. Trudy IAk.fil. AN SSSR. Ser. fiz. no.1: 23-26 '55. (MLRA 9:10)

(Cosmic rays) (Atmospheric pressure)

KUZ'MIN, A.I.; SKRIPIN, G.V.

Monthly and semimonthly variations in the intensity of cosmic rays. Trudy IAk.fil. AN SSSR. Ser. fiz. no.1:27-32 '55. (MLRA 9:10)

(Cosmic rays)

APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

KRASIL'NIKOV, D.D.; KUZ'MIN, A.I.; SHAFER, Yu.G.

A case of outbursts in the intensity of cosmic rays.
Trudy IAk.fil. AN SSSR. Ser. fiz. no.1:42-47 '55. (MLRA 9:10)

(Cosmic rays)

USSR/Nuclear Physics - Cosmic rays fluctuation FD-2207

Card 1/1 Pub. 146-12/25

Author : Kuz'min, A. I., and Skripin, G. V.

Title : Letter to the editor. Influence of lunar tidal fluctuations of the atmosphere upon the intensity of the hard component of cosmic rays

Periodical : Zhur. eksp. i teor. fiz. 28, 608-609, May 1955

Abstract : The authors state that a consideration of the influence of lunar tidal fluctuations in the atmosphere upon the intensity of the hard component of cosmic rays δI is of interest both for the study of the nature of the half-daily variations in the cosmic rays and for the study of the nature of the daily fluctuations of the temperature in the upper layers of the atmosphere (Ye. S. Selezneva, Izv. AN SSSR, ser. geogr., 9, 82, 1945). In connection with the fact that the period of the main lunar tidal fluctuation of the atmosphere equals one half of the lunar day (N. Ye. Kochin, Sobraniye sochineniy [Collected works], 1,1949), they expect the appearances of the effect of the fluctuations in the regular half-daily variations in the intensity of cosmic rays, but that these regular variations can be masked by statistical fluctuations of the cosmic ray particles. They thank Professor Ye. L. Feynberg. Five References

Institution : Yakutsk Affiliate, Academy of Sciences USSR

Submitted : January 19, 1954

corrected for barometric effect (-0.14% per mb), contrary to previ-

firmed by the sign of the summer--winter effect obtained by taking

Kuz'min, A.I.

Category : USSR/Nuclear Physics - Cosmic rays

C-7

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 622

Author : Kuz'min, AI., Skrypin, G.V., Tyanutova, G.V., Shafer, Yu.G.
Inst : Yukutsk Branch Acad. of Sciences USSR.
Title : Unique Flare of Intensity of Cosmic Rays.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 1, 66-68

Abstract : Report on the results of measurements of intensities of cosmic rays during the time of the great flare of solar activity on 23 February 1956. The measurements were made in Yukutsk (elevation 101 meters, 51° northern latitude, 129° eastern longitude) with the aid of ionization chambers shielded with 12 cm of lead and aimed with a telescopic system made of Geiger-Mueller counters. The maximum by which the intensity exceeded the usual value occurred at 3.40 -- 4 hours Greenwich mean time and amounts to 165 -- 200%, depending on the type of recording apparatus. Apparatus recording extensive showers with a density of 25 and 50 particles per square meter did not detect any increase in intensity.

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KUZ'MIN, A.I.

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Akademiya nauk SSSR. Yakutskiy filial

Variatsii intensivnosti kosmicheskikh luchey (Variations of the Intensity of Cosmic Rays) Moscow, Izd-vo AN SSSR, 1958. 168 p. (Series: Its: Trudy, seriya fizicheskaya, vyp. 2) 1,500 copies printed.

Resp. Ed.: Shafer, Yu.G., Candidate of Physical and Mathematical Sciences; Ed. of Publishing House: Fradkin, M.I.; Tech. Ed.: Pavlovskiy, A.

PURPOSE: This collection of articles is for scientists and students of cosmic rays and meteorology.

COVERAGE: This issue contains articles on experimental methods in the continuous registration of cosmic rays, the investigation of meteorological effects of the different components of cosmic rays, and the connection between variations in cosmic ray intensity and solar and magnetic activity. Part I describes apparatus used in

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measuring cosmic ray intensity on and under the earth's surface and in the upper layers of the atmosphere, and specifically discusses the ASK automatic ionization chamber. Part II discusses the theory, methods and results of the investigation of meteorological effects of the various components of cosmic rays. Part III discusses the characteristics of daily variations in cosmic ray activity. The following scientists are mentioned in the introduction: S.N.Vernov, Corresponding Member of the AS USSR, Professor Ye.L.Feynberg, and N.L.Grigorov, Doctor of Physical and Mathematical Sciences. The articles are accompanied by diagrams, tables, and bibliographic references.

TABLE OF CONTENTS:

Variations of the Intensity of Cosmic Rays 881

PART I. APPARATUS FOR MEASURING VARIATIONS
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PART II. METEOROLOGICAL EFFECTS

Variations of the Intensity of Cosmic Rays 881

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AVAILABLE: Library of Congress

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KUZ'MIN, A.I.; NESIS, A.I.

Carrying out superficial X-ray therapy with radioscopic diagnostic apparatus. Zdrav. Kazakh. 18 no.1:73-74 '58. (MIRA 13:7)

1. Iz balkhashskoy bol'nitsy No. 1 i Karagandinskoy oblastnoy klinicheskoy bol'nitsy.
(X RAYS--THERAPEUTIC USE)

KUZ'MIN, A. I., Cand of Phys-Math-Sci ---(diss) "Investigation of the Variations of Cosmic Rays Under the Earth," Moscow, 1959, 13 pp (Moscow State Univ imeni M. V. Lomonosov and the Scientific Research Institute of Nuclear Physics) (KL, 6/60-120)

KUZMIN, A. I.

"UNDERGROUND COSMIC RAY INTENSITY VARIATION"
A. I. Kuzmin

1. In 1957, regular observations of hard component intensities of cosmic rays were initiated by means of semi-cubic telescopes (with triple coincidences) at the surface of the Earth and at depths of 7, 20and 60 metres w.e. (water equivalent). These data helped to determine the barometric coefficients; 0.13%/mb; 0.1%/mb; 0.08%/mb; and 0.04%/mb, at the surface of the Earth and at 7 , 20 and 60 m.w.e., respectively. The variations, corrected for the barometric effect, are closely correlated with those expected due to the temperature effect. The best agreement between experiment and theory exists when the effective exponent in the intergral power law spectrum is equivalent to 1.3, 1.5, 1.7 and 2.0 at sea level and at 7, 20 and 60 m.w.e., respectively.

report presented at the International Cosmic Ray Conference, Moscow, 6-11 July 1959

Proceedings publ. Moscow 1960. Vol. 4, Variations of Cosmic Ray Intensity.

25(1) SOV/115-59-8-20/33

AUTHOR: Kuz'min, A. I.

TITLE: A Device for Checking Frequency Meters

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 8, pp 39 - 40 (USSR)

ABSTRACT: For checking reed and dial power frequency meters, the author suggests a simple device which showed good results at the Mogilev GKL. Depending on available parts, this device may be built in two versions in the workshop of any GKL. In the first version, the reference frequency meter and the frequency meter to be checked are connected to the output of a step-up transformer 6/220/110 v which in turn is connected to an ac generator G-31 of the tractor "Belarus'" (60 watts, 6 volts). The generator is connected by a belt transmission to a motor which may consist of a dc generator GBF-4105. The ratio of the motor and generator pulleys is 2:1. The generator is connected by a selenium rectifier VSA-5 (64 volts, 12 amps) to the 220-volt power mains. An autotransformer LATR-2 is used for controlling the rpm of the motor whereby

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A Device for Checking Frequency Meters

the frequency of the ac generator is changed from 45 to 55 cps. The second version consists of a motor-generator or converter (220/220 volts, 70 watts, 3000 rpm, 50 cps). The motor generator is connected to the power mains by a VSA-4 rectifier. The rpm number of the motor is controlled by an autotransformer LATR-2. There are 2 circuit diagrams.

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S/169/61/000/005/025/049
A005/A130

AUTHORS: Kuz'min, A.I., Danilov, A.A.

TITLE: On the meteorological effects of cosmic rays below the ground at depths lower than 100 m of water equivalent

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 11-12, abstract 5 G 95. (Tr. Yakutskogo fil. AN SSSR. Ser. fiz., 1960, no. 3, 58-64)

TEXT: The authors studied the meteorological effects of the hard component of cosmic rays, which was recorded at depths of 0.7, 20 and 60 m of water equivalent by means of counter telescopes. To establish correlations between the mean daily values of cosmic ray intensity, atmospheric pressure and atmospheric temperature, the authors utilize data from observations in Yakutsk from December 1, 1957 to October 30, 1958. For the barometric coefficient the following values were obtained: -0.13 ± 0.01 (ground level), -0.01 ± 0.1 (at 7 m w.e.), -0.08 ± 0.01 (at 20 m w.e.) and 0.05 ± 0.01 (at 60 m w.e.). The results of investigating the temperature effect indicate good agreement between the experimental data and theo-

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APPROVED FOR RELEASE: Monday, July 31, 2000 CIA-RDP86-00513R000928020(

On the meteorological effects of cosmic rays ... S/169/61/000/005/025/049
A005/A130

retical conceptions of the nature of this effect. Seasonal intensity variations were studied. The amplitude of the annual wave decreases with depth, and the time of the maximum is shifted from winter to spring months.

N.K.

[Abstractor's note: Complete translation.]

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3,1800 (1041, 1046)

29668
S/169/61/000/005/031/049
A005/A130

AUTHOR: Kuz'min, A.I.

TITLE: On the fundamental properties of solar-diurnal variations of cosmic rays

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 12-13, abstract 5 G 101. (Tr. Yakutskogo fil. AN SSSR. Ser. fiz., 1960, no. 3, 99-110)

TEXT: The author studied the solar-diurnal variation of cosmic ray intensity in the energy range from $2 \cdot 10^9$ to $100 \cdot 10^9$ ev at Yakutsk. He used data obtained in 1957-1958 from a neutron monitor, an ionization chamber and counter telescopes at depths of 0, 7, 20 and 60 m of water equivalent. The amplitude of diurnal variation corrected for the temperature effect substantially decreases with increasing energy of the particles recorded. The time of the maximum of the diurnal wave is close to 14 o'clock local time at the earth's surface and is shifted towards 15 - 16 o'clock at depths of 20-60 m of w.e.. From analyses of the data the author determined the variation spectrum of primary radiation, which has

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On the fundamental properties of ... S/169/61/000/005/031/049
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the form:
$$\frac{\delta D}{D}(\varepsilon) = \begin{cases} 0.155\varepsilon^{-1.0}, & \text{when } \varepsilon > 15 \text{ Bev} \\ 0, & \text{when } \varepsilon < 15 \text{ Bev} \end{cases}$$

Since the experimental data at depths of 20 and 60 m of w.e. disagree somewhat with theoretical expectations, the author concludes that the power of the source of diurnal variation decreases with increasing asymptotic latitude of arrival of the particles (the asymptotic latitude is defined as the angle between the particle's direction of motion in infinity and the plane of the geomagnetic equator). The author notes that the fundamental properties of the diurnal variations of cosmic rays examined in the present article do not contradict the concept of modulation of primary radiation by solar corpuscular streams carrying a frozen magnetic field. X

N.K.

[Abstractor's note: Complete translation.]

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3,2410
3,1800 (1041,1046)

29669
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A005/A130

AUTHORS: Kuz'min, A.I., Sokolov, V.D., Shafer, G.V.

TITLE: On the 27-day variations of cosmic ray intensity

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1961, 13, abstract 5 G 102. (Tr. Yakutskogo fil. AN SSSR. Ser. fiz., 1960, no.3, 111-115)

TEXT: The authors studied the nature of the 27-day variations of cosmic ray intensity on the basis of data from recordings at Yakutsk in 1957-1958. Using the epoch superposition method, they determined the amplitudes of the 27-day variations in intensity of the neutron component at the earth's surface and the hard component at depths of 0.7, 20 and 60 m of w.e.. They show that the results obtained do not agree with the assumption that 27-day variations are meteorological in nature. In view of the fact that the minima of the 27-day variations coincide with effective magnetic storms and that the ratios of the amplitudes of the 27-day variations of the different components are close to the ratios of the amplitudes

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On the 27-day variations of cosmic ray intensity A005/A130

of the Forbush effect of these components, the authors assume that these two types of variation are of common nature. They calculated the spectrum of the primary variations of intensity that satisfies the experimental results. In high energy regions the spectrum has the form:

$$\frac{\delta D}{D}(\varepsilon) = a\varepsilon^{-(0.5 \div 0.7)}$$

N.K.

[Abstractor's note: Complete translation.]

X

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